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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,511	07/29/2003	Senthil Govindaswamy	000173	7895

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Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
San Diego, CA 92121-1714

EXAMINER

CHEN, WENPENG

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/630,511	GOVINDASWAMY ET AL.	
	Examiner	Art Unit	
	Wenpeng Chen	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
 4a) Of the above claim(s) 25-34 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-46 is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-16 and 18-24 is/are rejected.
- 7) ☒ Claim(s) 13 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>5/24/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-24 and 35-46, drawn to Fig. 9 of an image decoder, classified in class 382, subclass 240.

II. Claims 25-34, drawn to Fig. 1 of a theater subsystem for decoding image and sound data for projection, classified in class 382, subclass 232.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because it includes decompression of audio information and the image decoding part recited in Claim 25 (evident claim of group II) defines a broader scope than that defined in Claim 1 (evident claim of group I). The subcombination has separate utility such as decompressing image data used in printer or still image that do not related to any sound information.

Because these inventions are distinct for the reasons given above and the search required for Group II such as audio decompression is not required for Group I, restriction for examination purposes as indicated is proper.

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3. During a telephone conversation with Mr. Minhas on 8/27/2004 a provisional election was made without traverse to prosecute the invention of group I, claims 1-34 and 35-46. (No traverse was mentioned in the conversation.) Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

5. The drawings are objected to because of the following informalities.

-- Fig. 9 shall be labeled "FIG.9".

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes

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made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description:

- module 214 in section 00045;
- module 740 in section 00047.

Specification

7. The disclosure is objected to because of the following informalities.

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-- The meaning of the term "FWM" shall be spelled out in its first appearance in section 00030.

Appropriate correction is required.

8. The attempt to incorporate subject matter into this application by reference to 09/564,174 and 09/563,880 in section 00034 is improper because each of them is a U.S. application which itself incorporates "essential material" by reference.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 22-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 22-24 claim instruction that is purely computer program per se. They do not claim a product such as a medium carrying the instruction.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-9, 11-12, 14-16, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Thyagarajan et al. (WO 01/35673 cited in IDS filed on 5/24/2004.)

Thyagarajan teaches an apparatus comprising:

-- a variable length decoder configured to variable length decoder compressed information and to generate a variable length decoded data block; (variable length decoder 120 of Fig. 1)

-- an inverse quantization module coupled to the variable length decoder, the inverse quantization module configured to inverse quantize the variable length decoded data block using a quantization parameter selected based on block size assignment information and address of data within the data block; (the combination of inverse zigzag scan serializer 122 and inverse quantization 124 of Fig. 1 being the inverse quantization module; lines 3-8, page 14; lines 1-21, page 12; In the decoding process, the PQR data provides the information block size assignment. Using the PQR, the inverse zigzag scan serializer 122 provides address of data within the data block. The quantization parameter is $fwm(i,j)*q$ assigned to each block size 2x2, 4x4, 8x8, and 16x16. Without knowledge of the address in a block, $fwm(i,j)$ cannot be selected.)

-- wherein inverse quantization module is configured to select the quantization parameter; (To perform inverse quantization as discussed above, the module needs to select the quantization parameter.)

-- wherein the inverse quantization module comprises a parameter selection module configured to select the quantization parameter, wherein the parameter selection module coupled to the inverse quantization module; (The part inside the quantizer to select the parameter is the

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selection module. Because the selection module is inside the inverse quantization module, the former is coupled to the latter.)

-- wherein the inverse quantization module further comprises an address decoder coupled to the parameter selection module, the address decoder configured to decode the address of the data within the data block, and wherein the quantization parameter is selected based on the block size assignment information and the decoded address of the data; (Using the PQR, the inverse zigzag scan serializer 122 provides address of data within the data block. Therefore, it is an address decoder.)

-- an inverse adaptive block size discrete cosine transform module coupled to the inverse quantization module, the inverse adaptive block size discrete cosine transform module configured to recover original data from the inverse quantized data block; (element 128 of Fig. 1; lines 9-15, page 14)

-- wherein quantization parameter comprises a Q-step and a frequency weighs mask table. (The quantization parameter is $fwm(i,j)*q$, where $fwm(i,j)$ is an element of frequency weighs mask and q is a Q-step.)

For Claim 8, because Q-step is not specifically defined, the examiner considers " $fwm(i,j)*q$ " is a Q-step for each coefficient. Thus Thyagarajan also teaches the feature recited in Claim 8.

The above passages also teach the corresponding methods of Claims 11, 12, and 14.

The above passages also teach the corresponding apparatuses of Claims 15-16 and 18-20.

Claim Rejections - 35 USC § 103

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13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thyagarajan et al. (WO 01/35673 cited in IDS filed on 5/24/2004) in view of Chen (US patent 5,241,395.)

Thyagarajan, as discussed above, teaches the parent Claims 9 and 16. Thyagarajan teaches $fwm(i,j)*q$ and multiplying $fwm(i,j)$ and q to the decoded coefficients. (In the coding process, the quantization is by division. In the decoding process, the inverse quantization is by multiplication.) The selection of $fwm(i,j)*q$ is by the process of selecting $fwm(i,j)$ -- weight mask table. However, Thyagarajan does not teach features related to selecting both Q_step and weight mask table.

Chen teaches a coding method and system, comprising the feature:

-- selecting different Q_step for blocks of different sizes for controlling image quality and bit rate. (column 8, line 60 to column 9, line 4)

It is desirable to control image quality and bit rate during image compression and decompression. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to extend Chen's teaching to select different q (Q_step) for Thyagarajan's blocks of different sizes in addition to the selection of weight mask tables during quantization, because the combination improves control of image quality and bit rate.

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Because inverse quantization is the reverse process of quantization, the same q and mask table for each block size shall be used in the inverse quantization. Therefore, the combination teaches:

- a first multiplier configured to multiply the variable length decoded data by the selected Q step and generating a first multiplication value;
- a second multiplier coupled to the first multiplier, the second multiplier configured to multiply the first multiplication value by a value from the selected frequency weight mask table.

15. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thyagarajan et al. (WO 01/35673 cited in IDS filed on 5/24/2004) in view of Pearlman et al. (US patent 5,764,807.)

Thyagarajan, as discussed above, teaches the corresponding method claims 11 and 12. However, Thyagarajan does not explicitly teach an instruction loaded on a computer readable medium as recited in the claims.

Pearlman teaches a computer program product comprising a computer readable medium and a computer program. (Column 2, lines 47-53)

It is desirable to make a processing method portable from a computer to another computer. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to store the processing steps of the method taught by Thyagarajan as instruction in a computer readable medium taught by Pearlman, because the combination makes the processing method portable and therefore increase its application.

Allowable Subject Matter

16. Claims 13 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to teach the method of Claim 13 and the apparatus of Claim 17 which specifically comprise:

-- *decoding address* of the data within the data block with decoding the address of the data into Y and X indices *based on a Y and X index system*;

-- *inverse quantizing* the variable length decoded data block *using a quantization parameter selected based on block size assignment information and the address of data*.

17. Claim 24 is not taught by the prior art with the reason given for Claim 13 above.

18. Claims 35-46 are allowed.

The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to teach the method of Claim 35 and the apparatus of Claim 41 which specifically comprise:

-- decoding an address of a data block into Y and X indices *based on a Y and X index system*;

-- receiving block size assignment information;

-- selecting an appropriate quantization parameter based on the block size assignment information and the Y and X indices.

Conclusion


19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 703 306-2796. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703 308-7452. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications. TC 2600's customer service number is 703-306-0377.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Wenpeng Chen
Primary Examiner
Art Unit 2624

September 2, 2004


9/2/04